

IN THE CLAIMS:

1. (Withdrawn) A capsular medical system comprising:
 - a radio receiving device in an extracorporeal device, to which a plurality of antennas are connected;
 - a radio transmitting device in a capsular in-body unit, which transmits medical data;
 - a switching device which switches antennas provided for the extracorporeal device;
 - a monitor device which monitors a receiving state of the selected antenna; and
 - a storing device which stores the receiving state every antenna,wherein the monitor device comprises:
 - a data amount measuring device which measures the data amount of medical data transmitted from the in-body unit;
 - a timer device which counts the time required for transferring the medical data in units from the in-body unit; and
 - a calculating device which calculates a data transfer speed based on the data amount and the time required for transferring the data.
2. (Withdrawn) The capsular medical system according to Claim 1, wherein the data amount measuring device measures the data amount between two symbols which are added to the head and the end of the medical data.
3. (Withdrawn) The capsular medical system, wherein the timer device counts an interval from the time for detecting the symbol added to the head of the medical data to the time for detecting the symbol added to the end of the medical data.

4. (Withdrawn) A capsular medical system comprising:

a radio receiving device in an extracorporeal device, to which a plurality of antennas are connected;

a radio transmitting device in a capsular in-body unit, which transmits medical data;

a switching device which switches the antennas provided in the extracorporeal device;

a monitor device which monitors a receiving state of the selected antenna; and

a storing device which stores the receiving state every antenna,

wherein the monitor device which monitors the receiving state comprises:

a device which previously stores the data amount of medical data in units from the in-body unit;

a timer device which counts a transfer requiring time of the medical data in units from the in-body unit; and

a calculating device which calculates a data transfer speed based on the time required for transferring the data amount.

5. (Withdrawn) A capsular medical system comprising:

a radio receiving device in an extracorporeal device, to which a plurality of antennas are connected;

a radio transmitting device in a capsular in-body unit, which transmits medical data;

a switching device which switches the antennas provided in the extracorporeal device;

a monitor device which monitors a receiving state of the selected antenna; and
a storing device which stores the receiving state every antenna,
wherein the monitor device comprises:

a storing device which stores the lowest allowable value in the
receiving state;

a comparing device which compares the receiving state with the lowest
allowable value; and

a switching instructing device which issues an instruction for switching
the antenna.

6. (Withdrawn) A capsular medical system comprising:

a radio receiving device in an extracorporeal device, to which a plurality of
antennas are connected;

a radio transmitting device in a capsular in-body unit, which transmits medical
data;

a switching device which switches the antennas provided in the extracorporeal
device;

a monitor device which monitors a receiving state of the selected antenna; and

a storing device which stores the receiving state every antenna,

wherein the monitor device comprises:

a first timer device which counts a time required for transferring the
medical data in units, which is transmitted from the in-body unit;

a second timer device which counts a time required for transferring the
medical data in units, from the in-body unit;

a calculating device which calculates a data transfer speed based on stored data amount and the time required for transferring the data; and

a position calculating device which calculates the position of the in-body unit based on the data transfer speed of each of the plurality of antennas.

7. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to ~~[[the]]~~ a body cavity;

an extracorporeal device comprising:

a communication device for communication with the in-body unit, which is arranged outside ~~[[the]]~~ a human body; and

at least two antennas connected to the extracorporeal device and arranged near ~~[[the]]~~ a body surface ~~along a running direction of a digestive tract~~ to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas; ~~[[and]]~~

a detecting device which detects a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit, by controlling the switching device to switch the plurality of antennas at a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, transmitting the detection request to the in-body unit, and receiving data on the receiving strength from the in-body unit~~[[,]]~~;

a transmission buffer and a reception buffer which are provided in the switching device and store transmission data and received data, respectively; and

a reception and transmission switch which is provided in the switching device and performs switching between a connection of the antenna with the transmission buffer and a connection of the antenna with the reception buffer,

wherein the extracorporeal device selects an antenna from the plurality of antennas in a preferable transmitting and receiving state in accordance with the data on the receiving strength received by the detecting device, and

the extracorporeal device detects the communication status with the in-body unit, generates a reception and transmission switching signal and performs the switching of the antennas in the switching device by switching the reception and transmission switch based on the reception and transmission switching signal.

8-9. (Cancelled)

10. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to ~~[[the]]~~ a body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside ~~[[the]]~~ a human body;

a plurality of antennas connected to the extracorporeal device and arranged near ~~[[the]]~~ a body surface ~~along a running direction of a digestive tract~~ to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

an antenna selecting device which selects, based on a receiving strength, in the in-body unit, of signals transmitted from at least two antennas, an antenna of the plurality of antennas in a preferable receiving and transmitting state; [[and]]

a detecting device which detects a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit, by controlling the switching device to switch the plurality of antennas at a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, transmitting the detection request to the in-body unit, and receiving data on the receiving strength from the in-body unit[[.]];

a transmission buffer and a reception buffer which are provided in the switching device and store transmission data and received data, respectively; and

a reception and transmission switch which is provided in the switching device and performs switching between a connection of the antenna with the transmission buffer and a connection of the antenna with the reception buffer,

wherein the detecting device detects communication states of antennas of a predetermined number less than a number of all of the plurality of antennas[[.]], and

the extracorporeal device detects the communication status with the in-body unit, generates a reception and transmission switching signal and performs the switching of the antennas in the switching device by switching the reception and transmission switch based on the reception and transmission switching signal.

11. (Original) The capsular medical system according to Claim 10, wherein the antenna whose receiving and transmitting state is checked is determined based on the antenna which currently receives data.

12. (Currently Amended) A capsular medical system comprising:
a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to ~~[[the]]~~ a body cavity;
an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside ~~[[the]]~~ a human body;
a plurality of antennas connected to the extracorporeal device and arranged near ~~[[the]]~~ a body surface ~~along a running direction of a digestive tract~~ to communicate data to the in-body unit,

the extracorporeal device further comprising:
a switching device which switches the antennas;
a detecting device which detects a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit, by controlling the switching device to switch the plurality of antennas at a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, transmitting the detection request to the in-body unit, and receiving data on the receiving strength from the in-body unit;

a transmission buffer and a reception buffer which are provided in the switching device and store transmission data and received data, respectively;

a reception and transmission switch which is provided in the switching device and performs switching between a connection of the antenna with the transmission buffer and a connection of the antenna with the reception buffer;

an antenna selecting device which selects, based on a receiving strength, in the in-body unit, of signals transmitted from at least two antennas, an antenna of the plurality of antennas in a preferable receiving and transmitting state; and

a storing device, which stores the communication state detected by the detecting device;

wherein when the receiving strength data is not obtainable in the selecting of the antenna by the antenna selecting device, the extracorporeal device refers to the communication state stored in the storing device to control the antenna selecting device to select the antenna that is assured to be communicable[.], and

the extracorporeal device detects the communication status with the in-body unit, generates a reception and transmission switching signal and performs the switching of the antennas in the switching device by switching the reception and transmission switch based on the reception and transmission switching signal.

13. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to [[the]] a body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside [[the]] a human body;

a plurality of antennas connected to the extracorporeal device and arranged near ~~[[the]]~~ a body surface ~~along a running direction of a digestive tract~~ to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

an antenna selecting device which selects an antenna from the plurality of antennas; ~~[[and]]~~

a detecting device which detects a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit, by controlling the switching device to switch the plurality of antennas at a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, transmitting the detection request to the in-body unit, and receiving data on the receiving strength from the in-body unit, the detecting device controlling the antenna selecting device to select an antenna in a preferable communication state detected by the detecting device at the predetermined time interval~~[[.]]~~;

a transmission buffer and a reception buffer which are provided in the switching device and store transmission data and received data, respectively; and

a reception and transmission switch which is provided in the switching device and performs switching between a connection of the antenna with the transmission buffer and a connection of the antenna with the reception buffer,

wherein the extracorporeal device detects the communication status with the in-body unit, generates a retention and transmission switching signal and performs the

switching of the antennas in the switching device by switching the reception and transmission switch based on the reception and transmission switching signal.

14. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device which is inserted or swallowed to be introduced to ~~[[the]]~~ a body cavity;

an extracorporeal device comprising a communication device for communication with the in-body unit, which is arranged outside ~~[[the]]~~ a human body;

a plurality of antennas connected to the extracorporeal device and arranged near ~~[[the]]~~ a body surface ~~along a running direction of a digestive tract~~ to communicate data to the in-body unit,

the extracorporeal device further comprising:

a switching device which switches the antennas;

an antenna selecting device which detects a receiving strength of a signal transmitted from the in-body unit by at least two antennas and selects the antenna in a preferable receiving and transmitting state; ~~[[and]]~~

a detecting device which detects~~[[,]]~~ a communication state including a transmitting state where the extracorporeal device carries out transmission to the in-body unit and a receiving state where the extracorporeal device carries out reception from the in-body unit, by controlling the switching device to switch the plurality of antennas at a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, transmitting the detection request to the in-body unit, and receiving data on the receiving strength from the in-body unit, the detecting device controlling the antenna selecting

device to select another antenna of the plurality of antennas when an operation for connection for the transmitting or receiving fails to establish the connection[.];

a transmission buffer and a reception buffer which are provided in the switching device and store transmission data and received data, respectively; and

a reception and transmission switch which is provided in the switching device and performs switching between a connection of the antenna with the transmission buffer and a connection of the antenna with the reception buffer,

wherein the extracorporeal device detects the communication status with the in-body unit, generates a reception and transmission switching signal and performs the switching of the antennas in the switching device by switching the reception and transmission switch based on the reception and transmission signal.

15. (Cancelled)

16. (Previously Presented) A capsular medical system according to Claim 14, wherein the antenna who's receiving and transmitting state is checked is determined based on the antenna which currently receives data.

17. (Cancelled)

18. (Previously Presented) The capsular medical system as set forth in claim 7, wherein the detecting device selects one of the at least two antennas arranged to communicate data to the in-body unit connected to the extracorporeal device, via the switching device, in response to a detected communication state corresponding to movement of the capsular in-body unit in the body cavity.

19. (Currently Amended) A capsular medical system comprising:

a capsular in-body unit having a radio communication device for introduction into a body cavity by swallowing or insertion; and

an extracorporeal device arranged outside a human body comprising:

a communication device for bidirectional communication with the in-body unit;

at least two antennas connected to the extracorporeal device and arranged near ~~[[the]]~~ a body surface ~~along a running direction of a digestive tract to communicate data~~ communicate data to the in-body unit;

a transmission/reception switching section which switches communication direction with the in-body unit;

a timing signal generating section which generates, based on a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, a timing signal related to timing for switching communication direction of the transmission/reception switching section; ~~[[and]]~~

an antenna selecting section which selects an antenna of the at least two antennas in a preferable transmitting and receiving state that communicates with the in-body unit among at least the two antennas based on the timing signal outputted from the timing signal generating section~~[[.]]~~;

a transmission buffer and a reception buffer which are provided in the switching device and store transmission data and received data, respectively; and

a reception and transmission switch which is provided in the switching device and performs switching between a connection of the antenna with the transmission buffer and a connection of the antenna with the reception buffer,

wherein the extracorporeal device detects the communication status with the in-body unit, generates a reception and transmission switching signal and performs the switching of the antennas in the switching device by switching the reception and transmission switch based on the reception and transmission switching signal.

20. (Currently Amended) A method for controlling a capsule medical system having a capsular in-body unit having a radio communication device which is inserted or swallowed into a body cavity, and an extracorporeal device arranged outside a human body and comprising a communication device for bidirectional communication with the in-body unit, and at least two antennas connected to the extracorporeal device and arranged near ~~[[the]]~~ a body surface ~~along a running direction of a digestive tract~~ to communicate data to the in-body unit, the method comprising:

a transmission/reception switching step which switches communication direction between the in-body unit and the extracorporeal device;

a timing signal generating step which generates, based on a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, a timing signal related to timing for switching the communication direction; ~~[[and]]~~

an antenna selecting step which selects an antenna of the at least two antennas in a preferable transmitting and receiving state that communicates with the in-body unit among at least the two antennas based on the generated timing signal~~[[.]]~~;

a communication status detecting step which detects the communication status with the in-body unit; and

a switching step which switches a reception and transmission switch for performing switching between a connection of the antenna with a transmission buffer which

stores transmission data and a connection of the antenna with a reception buffer which stores received data, based on the communication status with the in-body unit.

21. (Currently Amended) A method for controlling a capsule medical system having a capsular in-body unit having a radio communication device which is inserted or swallowed into a body cavity, and an extracorporeal device arranged outside a human body and comprising a communication device for bidirectional communication with the in-body unit, and at least two antennas connected to the extracorporeal device and arranged near ~~[[the]] a body surface along a running direction of a digestive tract~~ to communicate data to the in-body unit, the method comprising:

a detecting step which detects a transmitting state where the extracorporeal device carries out transmission to the in-body unit, and a receiving state where the extracorporeal device carries out reception from the in-body unit, by controlling the switching device to switch the at least two antennas at a predetermined time interval to transmit a request for detecting a receiving strength with respect to the in-body unit, transmitting the detection request to the in-body unit, and receiving data on the receiving strength from the in-body unit;

a transmission/reception switching signal generating step which generates a transmission/reception switching signal for switching communication direction between the in-body unit and the extracorporeal device based on the detection timing of the detecting step;
[[and]]

an antenna selecting step which selects an antenna of the at least two antennas in a preferable transmitting and receiving state that communicates with the in-body unit

among at least the two antennas in accordance with the received data on the receiving strength, using the transmission/reception switching signal as a clock signal[.];

a communication status detecting step which detects the communication status with the in-body unit; and

a switching step which switches a reception and transmission switch for performing switching between a connection of the antenna with a transmission buffer which stores transmission data and a connection of the antenna with a reception buffer which stores received data, based on the communication status with the in-body unit.